

MP3 Players

MP3 PLAYER ACCESSORIES
See page 40
for reviews of six
accessories designed
to help you get more
from your digital
music.

MP3 players keep getting smaller and better looking and they now offer more storage capacity than ever before. We sound out 12 of the best models around

M P3 players have revolutionised the way we listen to music. Even the smallest players allow us to carry hundreds of tracks in our pocket, and with a larger hard disk player you can keep to hand every record you've ever bought for your daily commute. Online music stores allow you to buy any song you hear on the radio without leaving your desk and listen to it wherever you want.



CHOOSING AN... MP3 PLAYER

With so many MP3 players on the market, choosing the right one can be difficult. Sound quality, battery life and ease of use can all vary greatly. Before you invest in a player, consider where and when you'll use it, how long it needs to last between charges and how much of your music collection you'd like to carry at a time.

FLASHDANCE

MP3 players use one of two means to store songs. Solid-state players store music in flash memory. They're small and inexpensive, and with no moving parts they'll never skip. These are ideal if you want to listen to music while exercising.

Larger players use hard disks to store your music. These hold hundreds of albums at a time, but are more vulnerable to vibration and shock. They're suitable for everyday activities such as walking and commuting, but need to be handled with a little care.

UNDER PRESSURE

The size of a music file varies according to the song's length, and the encoding used to compress it. As a rough guide, each four-minute song encoded at standard quality needs about 4MB.

Solid-state players aren't designed to store an entire music collection, but we'd recommend one

with at least 512MB of memory. This should be enough for 120 songs, or about 10 albums.

Medium-sized players such as the iPod mini store music on 1" hard disks. These store up to 6GB, or around 1,500 songs. This is enough for a small collection of CDs, but avid music fans are likely to run out of space.

Larger players such as the iPod use 1.8" hard disks with up to 10 times as much room. Even large music collections should fit on a 20GB player if encoded sensibly, and you can use the extra space to carry data files or backups.

FIGHT FOR YOUR RIGHTS

Many MP3 players allow you to buy music online and play it wherever you like, but not all players are compatible with all music stores. Most online stores use Digital Rights Management (DRM) technologies to protect the music they sell, and your player will need to support the DRM used by any shops you want to buy from. The two most common standards are protected AAC and protected WMA.

Apple's iTunes Music Store sells songs in protected AAC format. These can be played only by its iTunes software, and by iPod players. Most other stores, including Napster, sell protected WMA files. Many players support these files, but only those with a Microsoft Plays For Sure label are guaranteed to work.

Some other stores sell music with no such restrictions. Emusic (www.emusic.com) sells MP3 files with no protection. Emusic tracks should play on any device in this test, but fewer well-known artists are available than with the other services.

SOFT CELL

Without a decent battery, your dream player might prove to be a one-hit wonder. All but one of the products on review contain a rechargeable battery,

which should last for several hundred charges. Rio's Forge uses standard AAA batteries.

To test battery life, we left each device playing a 500MB set of music files at a comfortably loud volume, with the backlight turned off. We expected a player to last for at least 10 hours in this test. The table on page 177 shows exactly how many hours of continuous playback you can expect from each device.

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1.8" HARD DISK PLAYERS

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Creative Zen Sleek
Olympus m:robe MR-500
Sony NW-HD5 20GB



SOLID-STATE PLAYERS

REVIEW SOLID-STATE MP3 PLAYER

APPLE
iPod shuffle 512MB

RATING ★★★★★

PRICE £69 inc VAT

SUPPLIER www.anvika.co.ukDETAILS www.apple.com/uk

Apple's iPod shuffle is one of the smallest players around. It's distinctive and stylish, but its pure white plastic and removable endcap make it look like something a doctor might carry. Its tiny case doesn't have room for a display, and there are no advanced controls.

Music can be played sequentially in album or playlist order, or randomly in shuffle mode. Navigation is limited to scanning within a song, or skipping between tracks. Finding a specific song could involve skipping through 60 others. The shuffle doesn't respond too quickly to key presses, either.

There are no equalisation controls, so it's a good thing that the standard setting produces pretty good sound. Bass and treble are both gently boosted, which suits most listeners, but the definition of high-end frequencies suffers slightly through the earphones. These are the same good-looking earbuds supplied with larger iPods.

Music can only be copied to the shuffle using iTunes, and the player doesn't support WMA files. Non-protected files are automatically converted and transferred, but you'll only be able to use protected music purchased from the iTunes store. This may bother some users, but shouldn't prove too much of a limitation given the massive catalogue that's available.

The shuffle is a basic player, and it won't suit users who like plenty of control over their music. However, it offers plenty of storage for the price.

✓ Tiny and stylish; affordable; decent sound

✗ No screen; no EQ; minimal navigation

SPECIFICATIONS 512MB capacity, USB interface. **Part code** M9724TN/A

REVIEW SOLID-STATE MP3 PLAYER

IRIVER
N10 512MB

RATING ★★★★★

PRICE £99 inc VAT

SUPPLIER www.amazon.co.ukDETAILS www.iriver.com/eu

We didn't expect to see a smaller player than the iPod shuffle, but iRiver's N10 takes up marginally less volume and manages to pack in a display. Its smart headphones incorporate a neckstrap and are integrated into the endcap, but a regular 3.5mm audio jack means you can also use your own headphones.

Six buttons control the iRiver's functions. The glowing blue display, though small, is easy to understand, but the same can't be said for navigation through the menus. The context-sensitive button actions can be confusing, and some perform different roles depending on how long they are held down.

Computers don't recognise the N10 as a storage device, and it can't be accessed without installing iRiver's Music Manager software. This is easy to use, and does allow the player to store non-music files. With a transfer speed of less than 1MB/s, however, it's unlikely you'd want to transfer many large files.

The iRiver offers six preset EQ modes, all of which suffer from harsh-sounding mid-range frequencies. We were able to achieve good sound from the player, but only after 20 minutes spent battling with its fiendishly confusing equalisation menu. Our quality earphones improved the N10's sound further, but the standard ones aren't bad.

The N10 is a decent player, but it costs £30 more than the iPod shuffle. It needs a longer battery life and easier navigation to justify its premium price.

✓ Tiny; stylish

✗ Tricky navigation; sub-eight-hour battery life

SPECIFICATIONS 512MB capacity, USB interface. **Part code** N10-512

REVIEW SOLID-STATE MP3 PLAYER

DYNE
Tuny 7 512MB

RATING ★★

PRICE £119 inc VAT

SUPPLIER www.pciho.comDETAILS www.dynetel.com/english

Two of the hard disk-based players in this test have colour screens, but the Tuny 7's is the first we've seen on a flash device. It measures 3.3cm across the diagonal and displays image files with up to 260,000 colours. Uniquely in this test, the Tuny 7 can also play video files. Image and video quality is surprisingly good, but the display's tiny area hardly produces a cinematic experience.

The Tuny 7 is the only player here that can play music encoded as OGG Vorbis files as well as MP3 and WMA. Images, video and music are all copied directly to the player using Windows Explorer, and the transfer process is extremely quick for a flash device. There's no bundled management software, however, so you need to keep your music organised in folders.

Confusingly, the Tuny 7 uses separate menus for file navigation and system commands. More annoyingly, the file menu can be activated only when playback is stopped. Dyne's supplied headphones didn't look too promising, but a little fiddling with the custom EQ produced surprisingly clear and detailed sound. Disappointingly, the battery lasted less than six hours in our tests.

This is the only product here that can record from microphone, radio and line-in sources. It also has a useful USB host mode for copying from a compatible device such as a digital camera. The Tuny 7 is a flexible and likeable player, but it's slightly expensive and hamstrung by its awful battery life.

✓ Good sound; fast file copying; OGG support; video playback

✗ Expensive; terrible battery life

SPECIFICATIONS 512MB capacity, USB Hi-Speed interface. **Part code** DA2512

REVIEW SOLID-STATE MP3 PLAYER

RIO
Forge 512MB

RATING ★★★★★

PRICE £110 inc VAT

SUPPLIER www.amazon.co.ukDETAILS www.rioaudio.com

Rio's Forge makes no attempt to compete with the small size of the iRiver and iPod shuffle, and its styling is less sleek. It's designed to cope with use during active sports, though, and has some appropriate features. The most obvious of these are its earphones, which hook around the ear and are almost impossible to dislodge.

The Forge feels solid, and its case has firm rubber edging to protect against knocks. Right-handed users should find it possible to hold the player and operate all its controls with one hand, which could be useful when exercising. Though a sport clip and armband are supplied with the player, we managed to lose the unattached USB port cap within an hour.

This is the only player here with an expansion slot, which accepts SD and MMC cards with up to one gigabyte of storage. It's also one of the few devices in this test displaying a Plays For Sure badge. This Microsoft standard aims to guarantee compatibility between players and online music stores selling protected WMA files, such as Napster and MSN Music.

Transferring music to the Forge is quite slow, and sound using the standard earphones is only average. The 256MB and 512MB models can record FM radio reception, but the 128MB model cannot. This is a good choice for active users, but it's expensive when compared to the iPod shuffle.

✓ Great for workouts; good battery life; expansion slot

✗ Expensive

SPECIFICATIONS 512MB capacity, USB Hi-Speed interface



1" HARD DISK PLAYERS

REVIEW 1" HARD DISK MP3 PLAYER

APPLE iPod mini 6GB

RATING ★★★★★

PRICE £160 inc VAT

SUPPLIER www.dabs.com

DETAILS www.apple.com/uk



There's little doubt that the iPod mini's design and build quality have contributed to its success, but few were impressed by its battery life. When the 4GB model first launched in the second half of 2004, Apple claimed that it would play for eight hours on a single charge. In our latest tests it lasted just six hours and 11 minutes.

Apple recently refreshed the iPod mini, releasing a 6GB model, and took the opportunity to improve battery life to a purported 18 hours. We were sceptical about this claim, but amazed to find that it lasted over 24 hours in all our tests.

With its biggest weakness having been addressed, it's difficult to fault the revitalised iPod mini. The sound quality from its distinctive earphones may not be the best around, but most users will be more than happy with one of the 23 preset equalisations. The mini's circular controller makes navigation easy, although it isn't as precise as the m:robe MR-100's scroll bar (below).

Our biggest reservation about all the different iPod models is that they can only be managed using the iTunes software. They won't play WMA files, so you can't use music stores such as Napster; investing in an iPod means sticking with the iTunes Music Store. This is only likely to trouble a minority of users, though, so if it's not a problem for you, this is the player to buy.

✓ Fantastic battery life; great design; decent sound quality

✗ Won't play WMA files; no custom EQ

SPECIFICATIONS 6GB capacity, USB Hi-Speed interface. **Part code** M9803B/A

REVIEW 1" HARD DISK MP3 PLAYER

OLYMPUS m:robe MR-100

RATING ★★★★★

PRICE £150 inc VAT

SUPPLIER www.dabs.com

DETAILS www.olympus.co.uk



This sleek player from Olympus shows that style isn't just for iPods. The m:robe's metallic white case appears to have only a power switch and keylock button. Switch it on, however, and red lights shine through its glossy front panel to indicate touch-sensitive function buttons. The screen is backlit with a matching red light, completing a classy retro look.

We've had mixed experiences with touch-sensitive systems before now, but the m:robe is a joy to use. It has just the right level of sensitivity, and the central scroll bar always responds faithfully.

It's a little fiddly to get the m:robe into its supplied cradle, but it can be connected to a PC without it, provided you remember to take its proprietary USB cable with you. Music can only be transferred to the player using the Olympus m:trip software, which isn't particularly likeable or easy to use.

The m:robe's sound quality was among the best here. It also dealt well with tracks in compilation CDs, inserting minimal gaps between songs where some other players pause more noticeably. Scanning and skipping through many tracks created momentary harsh interference, though.

If you're looking for a stylish player but don't want to follow the herd and buy an iPod, the MR-100 could be the answer. It's just a shame that its battery life doesn't measure up to that of the latest iPod mini.

✓ Stunning looks; great control system; decent sound

✗ Annoying software

SPECIFICATIONS 5GB capacity, USB Hi-Speed interface

REVIEW 1" HARD DISK MP3 PLAYER

ARCHOS Gmini XS100

RATING ★★★

PRICE £119 inc VAT

SUPPLIER www.amazon.co.uk

DETAILS www.archos.com



The Gmini is the most affordable product here that uses a hard disk for storage, but its 3GB drive has the smallest capacity. It provides six times the space of the Dyne Tuny 7, however, which costs the same.

Although this is the smallest and lightest hard disk player, it doesn't have the style of the iPod mini or m:robe MR-100. It's available in four colours, but our Ice Grey model came bedecked in an unremarkable shade of silver. The case is livened up by some chrome inserts, which include a strap eyelet.

The Gmini's controls are laid out beneath its narrow display, and are easy to operate with one hand. Its simple, icon-based menu system is very easy to use, and there's plenty of useful track information during playback. Unfortunately, the player's power button also controls the keylock, as it has no dedicated switch.

The player was slow to respond to key presses while reading information from its hard disk. Transferring music to the disk was also quite slow, but the Gmini does compile its own track database. We prefer this approach, as music can be copied to the player using Windows Explorer, then browsed by categories such as artist or genre.

We like the Gmini, but its file transfer rate is slow and its earphones have little bass response and need upgrading. We'd rather spend the extra money on a player with another gigabyte or two of storage.

✓ Intuitive menu; small and light

✗ Poor headphones; slow file transfers

SPECIFICATIONS 3GB capacity, USB Hi-Speed interface. **Part code** 500713

REVIEW 1" HARD DISK MP3 PLAYER

THOMSON Lyra PDP2811

EXCLUSIVE

RATING ★★★

PRICE Around £150-£179 inc VAT

SUPPLIER www.argos.co.uk

DETAILS www.rcaudiovideo.com



Thomson's Lyra PDP2811 is as light as the Archos Gmini, and only slightly bigger. Though not especially attractive, its metallic grey plastic gives it a tidy appearance and it isn't cluttered with too many controls.

This is the only player here that identifies itself to Windows as a Portable Media Device. Computers with Media Player 10 installed show it as an Audio Device in the My Computer window, rather than a standard removable disk. Although it's possible to view the contents of the disk and drag music on to it, the system prevents non-audio files being copied. We found this frustrating, and transferring music was slower than we expected. Copying our 500MB test files took seven minutes and 28 seconds. When we repeated this test from a PC without Media Player 10, it was three times quicker.

We weren't too keen on the Lyra's rotary control, which looks odd, feels clumsy and doesn't add any useful functions. This was also the only product on test that couldn't display Björk's name correctly. At just under 10 hours, its battery life was only adequate.

These frustrations aside, the Thomson is a decent MP3 player.

Its earphones are pretty good, and the Lyra sounded great through our high-quality headphones. We liked its ability to compile its own music database, but its slow file transfers would make regular updating a chore.

✓ Very small and light; easy to manage content; good sound

✗ A little expensive; adding music is slow

SPECIFICATIONS 4GB capacity, USB Hi-Speed interface



1.8" HARD DISK PLAYERS

REVIEW 1.8" HARD DISK MP3 PLAYER

APPLE
iPod 20GB

RATING ★★★★★

PRICE £210 inc VAT

SUPPLIER www.anvika.co.ukDETAILS www.apple.com/uk

This 20GB iPod is the fifth generation of Apple's iconic player. It replaces the previous iPod and the iPod photo, bringing the picture support of the latter to all full-sized models. It has a USB host mode for direct communication with a digital camera, but the required USB adaptor is not included as standard.

The iPod's screen can display pictures with over 65,000 colours. There's support for multiple image formats, but by default iTunes preserves disk space by copying thumbnails. Photos look reasonable, but the screen is quite small and not especially bright. Pictures look better on the higher-resolution Toshiba Gigabeat, reviewed in *What's New, Shopper* September 2005.

As with the iPod mini, Apple appears to have responded to criticism of the previous player's battery life. When we last tested a third-generation iPod it lasted less than six hours. This new player managed almost 14 hours in the same test. Despite the lack of any custom equalisation, we were impressed with its sound using the Rock preset.

The iPod can't record and has no radio, but it does come with a couple of simple games. The entertaining Music Quiz lets you play 'beat the intro' with your music library, but the Breakout clone Brick shows that the circular control isn't quite as smooth as it looks.

The iPod improves with each generation, and the latest model is an extremely polished player. If you don't mind using iTunes, you'll love it.

✓ Lovely design; good sound and battery; picture display

✗ Won't play WMA files; no custom EQ

SPECIFICATIONS 20GB capacity, USB Hi-Speed interface. **Part code** MA079B/A

REVIEW 1.8" HARD DISK MP3 PLAYER

CREATIVE
Zen Sleek

RATING ★★★★★

PRICE £199 inc VAT

SUPPLIER <http://uk.insight.com>DETAILS <http://uk.europe.creative.com>

In the past we've criticised Creative's big MP3 players for being a little frumpy, so the name of this Zen raised our hopes. Sadly, it doesn't prove appropriate: the Sleek is one of the largest players here, and looks bland compared to many of its rivals.

The player's shell is made from brushed alloy, but is cut away at the front for its large controls and clear screen. Click buttons are arranged around a touch-sensitive vertical scroll bar, in an odd-looking shape resembling the Arc de Triomphe. Navigation is quite straightforward, but the scroll bar feels inaccurate compared to the Olympus m:robe MR-100's.

Music must be copied to the Zen using Creative's Media Explorer, which integrates with Windows Explorer. The Zen can be used as portable storage only if you first dedicate a portion of its hard disk to this role. This is annoying, and the player's proprietary data interface means you'll need to carry the supplied cable around to connect it to PCs.

Plugging earphones into the Sleek requires a surprising amount of force. The supplied earphones have thicker driver units than the others here and are less comfortable to wear. They don't sound especially clear or bright. This is the only hard disk player here with a radio, and it will record broadcasts or voice notes via its microphone. It sounds OK and has ample battery life, but it wouldn't be our choice.

✓ Good battery life; radio and microphone recording

✗ Clumsy controls; bland looks; not great for storage

SPECIFICATIONS 20GB capacity, USB Hi-Speed interface. **Part code** 70PF139000004

REVIEW 1.8" HARD DISK MP3 PLAYER

OLYMPUS
m:robe MR-500

RATING ★★★★★

PRICE £296 inc VAT

SUPPLIER www.dabs.comDETAILS www.olympus.co.uk

Like its smaller brother on page 175, the m:robe MR-500 is a stylish MP3 player with an unusual control mechanism. One of its sides is given over to a huge 9.4cm colour touch screen, which controls everything once the power has been switched on. However, the menu system was unresponsive and hard to understand, which was disappointing after our experience with the MR-100.

This is the only device here that comes with a remote control, although it doesn't have a clip for attaching to clothing. It has only a two-line display, which doesn't make operating the m:robe very easy. This is unfortunate because it's the most complex device in this test.

This is the first MP3 player we've tested that has an integrated digital camera. It produces decent-quality photos, but the screen updates slowly and there's no flash. There's no shutter button, and pressing the screen to take pictures makes them prone to shake.

The MR-500 sounds great, but we found it comparatively tardy when spooling or skipping songs. Adding music to the player is unacceptably slow for a hard-disk device, with our test files transferring at just 1.3MB/s.

It's hard to avoid the impression that the big and heavy MR-500 attempts too much. It sounds good, but with its unimpressive battery life and difficult controls, we'd rather Olympus had concentrated on the basics.

✓ Jack of all trades...

✗ ...Master of none

SPECIFICATIONS 20GB capacity, USB Hi-Speed interface

REVIEW 1.8" HARD DISK MP3 PLAYER

SONY
NW-HD5 20GB

RATING ★★★★★

PRICE £170 inc VAT

SUPPLIER www.dabs.comDETAILS www.sony.co.uk

Given Sony's history with the Walkman brand, it's surprising that it got off to such a slow start with digital music players. The company's first flash and disk-based players didn't support MP3 files and used the ATRAC3 system instead.

The new NW-HD5 plays MP3s, but like an iPod it won't play WMA files. This Microsoft format is becoming more popular with the rise of online music stores, so a player that doesn't support it could prove restrictive. That's a shame in this case, as the NW-HD5 is otherwise great.

Though the NW-HD5's smart alloy case contains a 1.8" hard disk, the device is smaller than the other three 20GB products here. Uniquely in this group it contains a replaceable Lithium-ion battery, which lasted for an extraordinary 30 hours in our test.

The front panel is studded with nine attractive, silvery control buttons. They feel classy, but we weren't keen on the flexible sliding cover that protects the USB and power connectors. The six-band equaliser didn't appear to work at all, but the customisable digital presets produced excellent sound quality.

Music can only be transferred to the NW-HD5 using Sony's irritating SonicStage software, which converts WMA files to Sony's proprietary ATRAC3 plus format. This player seems expensive, but in terms of storage it's the best value here. It's the one to buy if you don't need native WMA playback.

✓ Superb battery life; decent sound quality; good value; light

✗ Doesn't support WMA files

SPECIFICATIONS 20GB capacity, USB Hi-Speed interface. **Part code** NWH5R.CEK



SOLID-STATE PLAYERS

1" HARD DISK PLAYERS

1.8" HARD DISK PLAYERS

	APPLE	DYNE	IRIVER	RIO	APPLE	ARCHOS	OLYMPUS	THOMSON	APPLE	CREATIVE	OLYMPUS	SONY
Model	iPod shuffle 512MB	Tuny 7 512MB	N10 512MB	Forge 512MB	iPod mini 6GB	Gmini XS100	m:robe MR-100	Lyra PDP2811	iPod 20GB	Zen Sleek	m:robe MR-500	NW-HD5 20GB
Rating	★★★★	★★	★★	★★★	★★★★★	★★★	★★★★	★★★	★★★★	★★★	★★	★★★★★
HARDWARE												
Storage medium	Solid-state	Solid-state	Solid-state	Solid-state	Hard disk	Hard disk	Hard disk	Hard disk	Hard disk	Hard disk	Hard disk	Hard disk
Capacity (formatted)	512MB (487MB)	512MB (484MB)	512MB (497MB)	512MB (495MB)	6GB (5.67GB)	3GB (2.8GB)	5GB (4.64GB)	4GB (3.78GB)	20GB (18.5GB)	20GB (18.6GB)	20GB (18.6GB)	20GB (18.6GB)
Interface	USB	USB Hi-Speed	USB	USB Hi-Speed	USB Hi-Speed, optional FireWire	USB Hi-Speed	USB Hi-Speed	USB Hi-Speed	USB Hi-Speed, optional FireWire	USB Hi-Speed	USB Hi-Speed	USB Hi-Speed
Battery type	Li-ion	Li-poly	Li-poly	AAA battery	Li-ion	Li-ion	Li-ion	Li-poly	Li-ion	Li-ion	Li-poly	Li-ion (replaceable)
Battery rated charge cycles	More than 80% capacity remains after 400 cycles	Not stated	500-1,000	N/A	More than 80% capacity remains after 400 cycles	More than 80% capacity remains after 500 cycles	500	Not stated	More than 80% capacity remains after 400 cycles	Not stated	500	Not stated
Charging options	USB	USB, optional charger	USB	N/A	USB, optional charger	USB, optional charger	USB, charger	USB, charger	USB, charger	USB, charger	Charger	USB, charger
Dimensions (WxDxH)	84x25x9mm	75x37x14mm	62x27x13mm	67x67x23mm	92x51x13mm	91x43x14mm	90x52x15mm	50x89x14mm	104x61x16mm	59x101x17mm	110x74x22mm	90x60x15mm
Weight	22g	36g	28g (50g with neckstrap/headphones)	58g (80g including headphones)	100g	76g	96g	76g	162g	158g	216g	136g
FEATURES												
Display	None	3.3cm 260,000 colour LCD	96x64 pixel blue OLED	Greyscale LCD	4.2cm greyscale LCD	3.8cm greyscale LCD	4.3cm, 20,480-pixel monochrome LCD	3.8cm greyscale LCD	5.1cm 65,536-colour LCD	5.1cm greyscale LCD	9.4cm, 307,000 pixel colour LCD	4.4cm greyscale LCD
Storage device (pre/post software install)	Yes/yes*	Yes/NA	No/yes	Yes/yes	Yes/yes*	Yes/NA	Yes/yes	Yes/yes	Yes/yes*	No/yes*	Yes/yes	Yes/yes
Expansion slot	No	No	No	SD/MMC card max 1GB	No	No	No	No	No	No	No	No
FM radio	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No
Microphone record	No	Yes	Yes	No	No	No	No	No	No	Yes	No	No
Line input record	No	Yes	No	No	No	No	No	No	No	No	No	No
Radio record	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No
Headphone type	Bud earphone	Bud earphone	Bud earphone with neckstrap	Bud earphone with ear-loops	Bud earphone	Bud earphone with volume control	Bud earphone	Bud earphone	Bud earphone	Bud earphone	Bud earphone	Bud earphone
Charger	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Case	No	No	No	Sports clip	Belt clip	No	Soft pouch	Yes	No	Soft pouch	Soft pouch	Soft pouch
Cradle	No	No	No	No	No	No	Yes	No	No	No	Yes	No
Remote control	No	No	No	No	No	No	No	No	No	No	Yes	No
Supplied cable(s)	None	USB, 3.5mm audio, USB host adaptor	USB, USB adaptor plug	USB	Proprietary USB	USB	Proprietary USB, headphone extension	USB	Proprietary USB	Proprietary USB	Proprietary USB, audio/video output cable	USB
Other accessories and features	Neckstrap, 4 foam earphone covers	Neckstrap	Neckstrap, 4 foam earphone covers	Sports armband	None	Neckstrap	None	None	4 foam earphone covers	None	1.22 megapixel camera, neckstrap	Drop-sensor shock protection
TEST RESULTS												
Battery life	15h 27m	5h 13m	7h 32m	17h 28m (Duracell Ultra M3 AAA cell)	25h 01m	12h 06m	9h 59m	9h 54m	13h 57m	14h 55m	7h 30m	30h 13m
500MB transfer time using Windows Explorer	4m 20s (1.92MB/s)*	1m 15s (6.67MB/s)	N/A	6m 48s (1.23MB/s)	1m 10s (7.14MB/s)*	3m 57s (2.11MB/s)	2m 6s (3.97MB/s)	2m 37s (3.18MB/s)	45s (11.11MB/s)*	4m 15s (1.96MB/s)*	6m 13s (1.34MB/s)	38s (13.16MB/s)
500MB transfer time using supplied software	4m 52s (1.71MB/s)†	N/A	12m 58s (0.65MB/s)	7m 14s (1.15MB/s)	1m 16s (6.58MB/s)†	N/A	2m 13s (3.76MB/s)	8m 11s (1.02MB/s)	55s (9.09MB/s)†	2m 50s (2.94MB/s)	6m 21s (1.31MB/s)	1m 36s (5.21MB/s)†
Supported file formats	MP3, AAC, protected AAC, WAV, Audible	MP3, WMA, OGG, JPEG display, proprietary movie format	MP3, WMA	MP3, WMA, protected WMA, Audible	MP3, AAC, protected AAC, Apple lossless, WAV, AIFF, Audible	MP3, WMA, protected WMA, WAV	MP3, WMA, protected WMA	MP3, WMA, protected WMA	MP3, AAC, protected AAC, Apple lossless, WAV, AIFF, Audible, JPEG, BMP, GIF, TIFF, PSD, PNG display	MP3, WMA, WAV, protected WMA	MP3, WMA, protected WMA, JPEG, BMP, TIFF, PNG	MP3, ATRAC3, ATRAC3plus
Plays For Sure compatibility	No	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
BUYING INFORMATION												
Price inc VAT	£69	£119	£99	£110	£160	£119	£150	£150-£179 estimated	£210	£199	£296	£170
Price per megabyte	13.5p	23.2p	19.3p	21.5p	2.6p	3.9p	2.9p	3.7-4.4p estimated	1.03p	0.97p	1.45p	0.83p
Warranty	One year RTB	One year RTB	Two years RTB	One year RTB	One year RTB	One year RTB	Two years RTB	One year RTB	One year RTB	One year RTB	Two years RTB	One year RTB
Supplier	www.anvika.co.uk	www.pciho.com	www.amazon.co.uk	www.amazon.co.uk	www.dabs.com	www.amazon.co.uk	www.dabs.com	www.argos.co.uk	www.anvika.co.uk	http://uk.insight.com	www.dabs.com	www.dabs.com
Details	www.apple.com/uk	www.dynetel.com	www.iriver.com/eu	www.rioaudio.com	www.apple.com/uk	www.archos.com	www.olympus.co.uk	www.rcaudiovideo.com	www.apple.com/uk	http://uk.europe.creative.com/70PF139000004	www.olympus.co.uk	www.sony.co.uk
Part code	M9724TN/A	DA2512	N10-512	N/A	M98038/A	500713	N/A	N/A	MA079B/A			NWHD5R.CEK

* Portion of disk must be set aside for file storage † WMA tracks previously converted to AAC or ATRAC3plus

LABS VERDICT MP3 PLAYERS

Flash memory-based players we've seen in the past have been quite basic, but some delivered decent sound and storage for a reasonable price. In this test, however, we found that most flash players included plenty of features but cost too much. Only Apple's iPod shuffle provides good value and it's our Best Budget Buy.

All four 1" hard disk players are competent and easy to use. Two could do with more battery life, but at a shade under 10 hours they're just about acceptable. If you're looking for something to stand out from the crowd, the

Olympus m:robe MR-100 looks superb. Otherwise, Apple's iPod mini is a great buy. With a neat design and astonishing battery life, it wins our Best Buy award.

If you need the increased storage of a 1.8" disk, two stand out. Apple's latest iPod is easy to use and allows you to view photos on its colour screen. If you want to buy music from the iTunes Music Store, it's a good choice. If you don't want to buy music online, though, you should pick Sony's NW-HD5. It's cheaper and has a removable battery that lasts for an astonishing 30 hours. It's our Best Buy.

SOLID-STATE MP3 PLAYER

APPLE
iPod shuffle



1" HARD DISK MP3 PLAYER

APPLE
iPod mini



1.8" HARD DISK MP3 PLAYER

SONY
NW-HD5

